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ABSTRACT

This study was conducted in order to determine the impact of a 3-year, theory based, inservice training program on teaching effectiveness for classroom teachers. Feedback on observed teaching effectiveness competencies was provided for each teacher in the study sample, along with a profile of student learning styles and data on student perceptions of the classroom environment. This information provided the basis for determining each teacher's needs, upon which teaching strategies were planned. Participants included vocational high school teachers drawn from seven schools. The sample was divided into three groups: (1) two schools designated as full treatment experimental group X; (2) three schools identified as medium treatment control group A; and (3) two schools designated as a minimum treatment control group B. Teachers were told they would receive information about their teaching that would help improve their effectiveness. Results suggest that inservice programs conducted over a 3-year period had a positive outcome in increasing effectiveness for those teachers in the experimental group. The theoretical base was understood and applied by teachers, and their teaching effectiveness scores showed marked improvement as measured by three different instruments. (LL)

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IMPACT OF A SUSTAINED THREE-YEAR PROGRAM OF IN-SERVICE ON TEACHER EFFECTIVENESS USING KNOWLEDGE OF TEACHING AND LEARNING STYLES, CLASSROOM ENVIRONMENTS AND OBSERVATIONAL FEEDBACK

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ABSTRACT

A study was undertaken at the University of Nebraska-Lincoln to determine the impact of a sustained three year in-service program on teaching effectiveness. The primary emphasis of the study was to determine the impact of an on-going, theoretical based, three year in-service training for classroom teachers. The intent of the in-service was designed to meet teacher's individual needs. Feedback on observed teaching effectiveness competencies was provided for each teacher. In addition, a profile of student learning styles and data on student perceptions of the classroom environment was furnished each year. This information provided the basis for determining each teacher's needs, and based upon those needs, teaching strategies were planned.

The study demonstrated that in-service programs conducted over a three year period had a positive outcome in increasing effectiveness for those teachers in the experimental group. The theoretical base was understood and applied by teachers, and their teaching effectivenss scores showed marked improvement.

IMPACT OF A SUSTAINED THREE-YEAR PROGRAM OF IN-SERVICE ON TEACHER EFFECTIVENESS USING KNOWLEDGE OF TEACHING AND LEARNING STYLES, CLASSROOM ENVIRONMENTS AND OBSERVATIONAL FEEDBACK

INTRODUCTION

There seems to be an endless number of reports that suggest that American education is in need of improvement, (National Commission on Excellence in Education, 1983; Goodled, 1984; Carnegie forum, 1986). So frequently the measures that are taken to address these issues are superficial and create little or no change in the existing practice of teaching. Cuban (1990) after making a careful analysis of why school reforms keep re-occurring, stated that it should come as no surprise that many reforms seldom go beyond getting adopted as policy --- most get implemented in word rather than deed, especially in classrooms. What often ends up in district and schools as signs of reform are new rules, different tests, revised organizational charts, and new equipment. Seldom, says Cuban, are the deepest structures of schooling such as teaching practices and classroom routines fundamentally altered even at those historic moments when reforms seek those alterations as the goal.

Much research has been done to identify what teachers need to do to become more effective. Much of this research was completed in laboratory or other highly controlled settings in which environmental factors that are often found in the day to day operation of the classroom have been reduced. As a result, teaching behaviors that were found to be effective in the laboratory may be less effective in the environment of the operating school.

Three areas of research that have been identified in the literature to improve teaching effectiveness are teaching and learning styles, classroom environments, and classroom observational feedback. This research report addresses the question as to whether these three factors in the teaching process, when implemented through in-service to practicing teachers, can change their teaching effectiveness.

OBJECTIVES

One overall objective guided the study, it was to: determine the effect that teacher knowledge of teaching and learning styles, classroom environments, and feedback from classroom observation learned through extensive in-service, had on teaching effectiveness.

RELATED LITERATURE

Teaching is truly a human task which requires time, enthusiasm, planning, and a willingness to seize every teachable moment. Effective teaching is certainly more than imparting knowledge of a subject; but rather it is the genesis of stimulating the love for learning. The following related literature served as a basis for practice in this research. It is divided into four areas: teaching effectiveness, learning styles, observation, and in-service.

Davies (1981) believes that teaching is a combination of efficiency and effectiveness. While efficiency is concerned with doing things right, effectiveness is concerned with doing the right things. Effectiveness involves focusing upon opportunities, not difficulties. It is identifying priorities and key result areas. Effective teachers spontaneously vary their approach depending upon the needs and the task and the people involved with learning. Effective teachers utilize effective communication, appear to like people, are well motivated and energized, possess a breadth of vision and have the ability to change rules and style.

Twenty-five years ago, Coombs and McGregor (1965) developed a list of statements that concur with Davies as they defined effective teachers as people who:

1. Understand how things seem to students.
2. Orient themselves to people rather than to things.
3. Deal with both subjective and objective experiences.
4. Trust people and believe in them.
5. Assume that people are friendly and cooperative.
6. Believe that people are worthy rather than unworthy.
7. Assume that people are active and motivated, rather than passive and uninterested.

Both authors agree that effectiveness can be learned.

There are many ways for teachers to learn to become more effective. One such

enhancement strategy is developing knowledge pertaining to students' learning styles. This information can help teachers gain greater understanding about the differences students bring to the classroom. Claxton and Murrell (1987) wrote that identifying a student's style contributes to more effective learning. Cross (1986) supported these findings by stating that learning style when linked with other data about students holds great promise for helping faculty improve their teaching.

A second way for teachers to become more effective is through in-service and staff development programs. Erikson and Rose (1976) found that in-service educational opportunities can promote growth and change. There are a variety of types of in-service programs. The short-term in-service is a one-shot program involving workshops and seminars which concentrate on a particular topic. This kind of program is most appropriate when the purpose is to develop an awareness of new concepts or to serve a large number of individuals in a short period of time.

A second major kind of in-service involves a long range, concentrated effort often within an organization like a school district. It may be planned over a long period of time (several weeks to a year or more). The goal is to cause a change in behavior of individuals within the organization. Jones and Lowe (1990) supported the findings of Erickson and Rose. They stated that staff development is found to be successful in changing teacher effectiveness when it is a continuing, on-going practice.

A third type of in-service education as described by Tibbetts (1990) maintains that individually designed staff development programs are essential for serving the diverse needs of teachers. Tibbetts wrote that it can be difficult to get teachers to change ingrained patterns of teaching. While people can readily accept change in things, it is a slow process to accept change in personal behavior and patterns. Tibbetts asserts that educators recommend individualization for students but ignore the individual staff development needs of teachers. He avowed that we KNOW better than we DO and concludes that effective staff development appears to require a continuous sequence of theory and research, demonstration of content and techniques, practice with structured feedback, peer coaching and evaluation of results. Tibbetts believes that anything short of this will result in fragmented learning without effective transfer.

To assist teachers with individual needs Medley, Coker, and Soar (1984) suggested a

structured observation system. They maintained that there are few teachers in any school who feel that the environment in their classroom could not be improved in some way. They advocated the following procedures for the most effective results in changing teacher practices:

1. Make evaluation early in the year in order to diagnose areas of weaknesses on which a teacher can focus efforts to improve.
2. Create a system for support and feedback to help teachers change behavior.
3. Continue the evaluation process over an extended period of time.

In a study conducted by the Stanford Center for Research and Development in Teaching (SCRNT) researchers Clark, Snow and Shovelson (1976) conducted three experiments on learning to teach. They found that few teachers showed marked increases in student learning as practice changed. Practice, by itself, did not enable teachers to increase student achievement. This finding indicated that teachers might profit from a process that would enable them to observe more systematically the effects of their teaching on students. The Stanford Group recommends a training program that would help teachers become researchers on their own teaching effectiveness. The Stanford Group stated: "Such a program would capitalize on the fact that every day or hour of teaching is an opportunity for a teacher to try new combinations of teaching skills and strategies, observe the effects, and adjust instructional performance to suit the particular students, situation and subject matter. Improvements in teaching effectiveness will be achieved only after teachers themselves learn to define and solve instructional problems in terms of the uniqueness of the complex teaching situations they face alone."

PROCEDURES

Population/Sample: The population for the study was public secondary high schools offering vocational subjects, within 150 miles of a major mid-western city. From that population, seven schools were randomly selected to participate. Participating schools ranged in size from approximately 75 students to 300, grades 9-12. A letter was sent to the high school principals explaining the nature of the program. Principals in turn encouraged all vocational teachers to participate. All full-time vocational teachers agreed to participate, even though it was voluntary.

The sample of vocational teachers ranged from three to seven teachers per school.

Vocational subjects taught were: Agriculture, Business, Home Economics and Industrial Education. The sample was divided into three groups: 1. two schools were designated as the full treatment experimental group X; 2. three schools were designated as the medium treatment control group A; and 3. two schools were designated as the minimum treatment control group B. Groups were not informed that they were part of an experiment, however, teachers were told they would receive information about their teaching that would help improve their effectiveness.

Treatment: The purpose of the project was to determine if in-service education, wherein teachers could gain knowledge about their teaching students learning styles, their classroom environment and teaching effectiveness competencies derived from observation, would change their teaching effectiveness scores. Before any treatment was applied, teachers selected a group of competencies upon which their teaching effectiveness scores would be based. The following treatments were applied:

Instrumentation: Three instruments were used throughout the project. Teaching/learning styles were identified using the Myers-Briggs Type Indicator (MBTI), Form G (Myers, 1985). This is a widely used psychological instrument that has identifiable teaching and learning styles (Golay, 1982; Kiersey, 1978; Lawrence, 1982; Myers, 1985; Silver, 1981; McCaulley, 1976, 1974). The MBTI has eight sub-scales which have a reliability of .80.

The second instrument used was the Classroom Environment Inventory (CEI), developed by Stern (1979). The CEI has been normed and contains 300 questions divided into 30 sub-scales with a reliability coefficient of .64. The CEI is designed to measure the psychological environment of the classroom as perceived by students.

The instrument used to collect teaching effectiveness data was the Classroom Observation Keyed for Effectiveness Research (Coker, 1984). The COKER is a low-inference sign instrument used by observers to code teacher and student activities. This instrument has evolved out of five other observational instruments: OSCAR 5V (Medley, 1973); STARS (Spaulding, 1976); FLACCS (Soar, Soar, and Ragosta, 1971); TPOR (Brown, 1970), and CASES (Spaulding, 1976).

Year one

1. **Experimental teachers (Group X).** In August before school started, experimental group X received two full days of in-service. Day one was an introduction to teaching/

learning styles and on day two the teachers learned teaching strategies to employ with differing styles of teaching and learning. Two additional one-hour training sessions were held, one in October and another in April. The intent of the meeting was to discuss problems relating to the application of styles in the classroom. At the October meeting teachers were given the results of their students learning style profiles. Each teacher received a minimum of four hours of classroom observation, two hours in the fall and two hours in the spring. The COKER instrument was used for observation. In addition, the ninth and tenth grade students were given the Myers-Briggs Type Indicator (MBTI) in September and the Classroom Environment Index (CEI) instrument in November.

2. **Medium treatment teachers** (Group A). Before school started, one full day of in-service was provided for this group. This was the same first day workshop the experimental group received on teaching and learning styles. No additional in-service was given that school year. Each teacher was observed and data collection procedures were the same as with the experimental group.
3. **Minimum treatment teachers** (Group B). No in-service was given. Teachers were observed and data collected from students using the same procedures as with the experimental group.

Year two:

1. **Experimental teachers** (Group X). A one-day workshop was given before school started. The first half was a review and discussion of learning styles, and in the second half, the teachers reviewed the results of their reports from the COKER and results of students' perceptions of their classroom environment. Teachers selected specific teaching effectiveness competencies and areas of classroom environment that they agreed needed improvement. These identified needs were to be worked on for the coming year. Teaching strategies were discussed that would improve these areas. For example, if a teacher identified that they wished to improve their enthusiasm score, information was provided on how to use more effective verbal and non-verbal behavior. A one hour meeting was held in the fall and spring to discuss problems encountered in applying newly learned teaching effectiveness strategies. At that time, a current year set of student learning style profiles was provided. Teachers

were observed a minimum of four hours, two in the fall, two in the spring. Ninth and tenth grade students were administered the MBTI in September and the CEI in November.

2. **Medium treatment (Group A).** A one-half day workshop on the application of teaching/learning styles was given before school started. Learning styles of their students and classroom environment scores were interpreted for the first time. Teaching effectiveness scores from the COKER were given, but no in-depth in-service was provided for those effectiveness areas needing improvement. The same data collection procedure was performed as was done for the experimental group.
3. **Minimum treatment (Group B).** A one-half day workshop on teaching/learning styles was conducted in September after school started. Results of student learning styles profiles was not provided until late spring. Data was collected using the same procedure as the experimental group for year two, but no data was provided to the teacher.

<u>Year three</u>:

1. **Experimental teachers (Group X).** Before school began , a one-half day workshop was provided on teacher agreed upon strategies to improve teaching effectiveness. Additional weak teaching effectiveness competencies as identified by the COKER were selected by the teachers for attention as a result of year two data. Participants learned how to observe their peers using the Classroom Observation Keyed for Effectiveness Research (COKER) instrument and were encouraged to provide feedback to their paired colleague. Only one after school meeting to discuss progress was held. Student learning style profiles were provided early in fall. The same pattern of data collection was followed as in other years.
2. **Medium treatment (Group A).** A one-half day workshop on how to interpret their COKER scores and strategies to improve them was provided. Student learning profiles for the current year were provided in October. Classroom environment scores were provided from the previous year. Data collection was the same as in other years.
3. **Minimum treatment (Group B).** No workshops were held, although student learning style profiles and Classroom Environment scores were provided from the previous year in early fall. Late in the spring, COKER teaching effectiveness scores were mailed to each teacher. Data collection was not changed from previous years.

RESULTS/DISCUSSION

To determine the effect of treatments on subject teachers over the three year period of the research, Analysis of Variance and Fisher's LSD test were used to compare mean scores of teachers observed with the COKER instrument.

The full treatment experimental group of teachers scored significantly higher on eleven of 24 teaching effectiveness competencies; the medium treatment control group scored significantly higher on three competencies and the minimum treatment control group did not score significantly high on any competency, thus indicating that the treatment had a positive effect on the experimental group of teachers. (Table 1).

Each teaching effectiveness competency is discussed in the order as presented in Table 1. For competency 1, demonstrates enthusiasm, there were no significant differences between groups, even though the experimental group X had a higher score. The importance of enthusiasm was strongly emphasized with the experimental group.

Competency 2, provides learning experiences for use outside school, the Experimental Group X scored significantly higher than Control Group B ($p<.05$). Teachers in group X learned about the importance of making lessons relevant to the real world based on student learning style.

For competency 3, provides opportunities for successful experience, there were no significant differences, even though Group X was made aware of its importance. This finding of no difference may be due in part to the espoused vocational philosophies of teachers in the experiment who believe that learning by doing is very important.

There were significant differences between Groups for competency 4, demonstrates proper listening skill. Group X was higher than Group B ($p<.05$). This difference may be due to Group X's heightened awareness of the importance of student differences and their effort to reduce teacher talk.

Competency 5, maintains an action learning environment, significant differences were found in favor of group X. Group X was higher than both groups A and B ($p<.05$). The importance of competency 5 was strongly emphasized with group X in workshops and teacher meetings, especially for the high number of active learners identified in their classes.

Group X scored significantly higher than group B on competency 6, encourages students to ask questions ($p<.05$). Group X teachers seemed to be more successful in

applying the principles of creating a positive learning environment in which students could ask questions.

Teachers in group X were to be more successful in applying competency 7, provides positive feedback, than group A and B ($p<.05$). Here the experimental group X teachers seemed to have more successfully applied their knowledge of the impact of positive feedback. This finding may be due in part to the feedback information they received through the COKER instrument.

Although competency 8, demonstrates problem solving skill was not an emphasis with group X, they scored significantly higher than group B ($p<.05$). An explanation for this difference is not clear.

For the next three competencies: 9, clear directions; 10, effective classroom management; and 11, provides a clear description of tasks, teachers in group A scored higher ($p<.05$) than the other two groups. These competencies were not emphasized in any group, therefore these differences may be attributed to personality differences of group A teachers. A high percentage of group A teachers was identified as thinking judging personality types, as revealed in another analysis of data not presented in this report. This style of teacher often places a high priority on these competencies.

Competency 12, uses a variety of strategies was emphasized in workshops with group X and they did score higher than group B ($p<.05$). Teachers in group X may have scored higher because of their recognition that students with differing learning styles need to be afforded a variety in teaching strategies to maximize learning.

There were no significant differences between groups for competency 13, demonstrates patience and empathy, and competency 14, monitors learner understanding. Group X teachers understanding of learning styles did not make a measurable difference in exhibiting patience. This may be due in part to the probability that all vocational teachers at times must learn to cope with difficult students.

Table 1

COKER Teaching Effectiveness Competency Mean Scores By Treatment Group Over Three Years

Coker Teaching Effectiveness Competency	Full Treatment Experimental Group X N=21	Medium Treatment Control Group A N=25	Minimum Treatment Control Group B N=37
1. Demonstrates Enthusiasm for Teaching	53.2	51.0	49.0
2. Provides Learning Experiences and Principles for Use Outside School	55.4a*	51.0	49.1b
3. Provides Opportunities for Successful Experiences	52.2	51.0	49.4
4. Demonstrates Proper Listening Skills	54.1a	51.4	48.5b
5. Maintains an Active Learning Environment	55.2a	49.6b	48.2b
6. Encourages Students to Ask Questions	56.1a	51.0	47.5b
7. Provides Positive Feedback on Performance	56.4a	51.0b	47.1b
8. Develops and Demonstrates Problem Solving Skills	55.1a	52.0	49.1b
9. Gives Clear Directions and Explanations	49.1b	54.4a	49.3
10. Implements an Effective Classroom Management System for Positive Behavior	49.0	54.1a	47.2b
11. Provides a Clear Description of the Learning Task and Its Content	50.0	55.1a	48.0b
12. Uses a Variety of Instructional Strategies	54.0a	52.5	48.1b
13. Demonstrates Patience, Empathy and Understanding	53.0	51.0	49.1
14. Monitors Learner, Understanding and Reteaches	53.1	51.4	49.2
15. Helps Students Recognize Progress and Achievements	55.2a	51.4	47.1b
16. Provides Learners Practice and Review	56.1a	51.1	47.2b
17. Demonstrates Ability to Work With Individuals, Small or Large Groups	53.2a	52.1	48.1b
18. Assists Students in Discovering and Correcting Errors and Inaccuracies	53.0	52.3	48.4
19. Teacher Stimulates Student Interest	50.1	49.1	52.1
20. Provides Examples of How Task is to be Completed	53.4	53.0	49.1
21. Uses a Variety of Resources and Materials	52.1	50.1	48.4
22. Uses a Variety of Cognitive Levels in Strategies of Questioning	54.1	51.0	49.2
23. Allows for Individual Difference in Evaluation	52.0	50.2	49.1
24. Uses Convergent and Divergent Inquiry Strategies	54.3a	52.1	48.1b

*Note: Letter "a" is significantly greater than letter "b" ($p<.05$) by Fisher's LSD Test

Although teachers in group X did not receive much instruction for competency 15, 16 and 17, helps students recognize progress, provides practice and review, and demonstrates ability to work with individuals and small groups, they did score higher than Group B ($p<.05$). Group X teachers may have recognized the need to improve from their feedback of COKER scores for these three competencies.

There were no significant differences between groups for competency 18, assists students in correcting errors. There was no specific instruction provided to any group in this area.

There were no significant differences for competencies 19-23 even though group X had specific instruction in competencies 19, stimulating student interest and 22, uses a variety of cognitive levels in questioning. Why there were no significant differences is unknown.

The last competency to be tested was 24, uses convergent and divergent inquiry strategies. Group X was higher than group B ($p<.05$). Since this was not an emphasis of any workshop for group X, the difference may be due to recognition for need for improvement as a result of feedback from COKER observation reports.

In sum, results seem to indicate that the in-service programs that the experimental group X of teachers received was effective in helping them achieve higher teaching effectiveness scores. In most instances, data in Table 1 indicate that the limited in-service training group A received helped them to achieve average scores between Groups X and group B. Group B teachers who received little or no in-service in time to affect their scores, consistently scored below the other two groups, except for competency 19.

CONCLUSIONS

Several conclusions can be drawn from this study that could be applied to the practice of teacher improvement. First, in-service programs that have a sound theoretical base of substance and can be understood and applied by teachers, seemed to help teachers be more effective. Three areas of in-service training that helped the experimental teachers be more effective were their knowledge and application of teaching and learning styles, classroom environments and teaching effectiveness competencies. Teacher identification of needs based on observational and student data and then developing a plan to improve had a significant effect on the experimental group of teachers.

At the end of year one, the experimental group X teachers were very enthusiastic about their success in applying the principles learned from teaching and learning styles theories. This enthusiasm was exhibited in the teacher meetings in the kinds of in-dept questions asked as to how to solve problems, and their self-report of efforts to explain their classroom "success" to colleagues not in the program. Immediate supervisors frequently commented about the enthusiasm observed in the experimental teachers.

During the second year, teachers in the experimental group X were beginning to grasp the importance of what they had learned because they had a year of application experience as well as observational data from the COKER and the CEI instruments. Teachers in the experimental group X were beginning to practice what Valverde (1982) defined as reflective teaching, where an individual asks value-laden questions and responds to memory and then concludes whether they are satisfied or dissatisfied with their teaching. They were also responding in ways that Brophy (1976) observed, that is, teachers who act in self-defeating ways without awareness, will change their behavior quickly if the problem is called to their attention.

The third year teacher in the experimental group X learned to observe the teaching behaviors of colleagues using the COKER instrument. This had an impact on their own performance, but to what degree is not known.

It is evident from the results, that in-service education as conducted over a period of three years with the teachers in experimental group X had a positive outcome. It is difficult to conclude what precisely contributed to the results, the content of the in-service programming or the duration of the experience; certainly both had an impact.

In-service content, one could hypothesize, had the greatest impact on the differences between groups. In-service programs with content that is not based on sound pedogical theory would create little change. It is also worth noting that the in-service was designed to meet the individual needs of each teacher.

The three year duration of the in-service program had a positive effect on change of teacher behavior. Other studies on in-service education found similar results. Borg (1972), and Little, et.al. (1987) found a relationship between duration of in-service an teacher classroom effectiveness.

A final caveat is needed. Conducting field research to improve teaching effective

ness is at times frustrating, especially when teachers change schools or administrative leadership is lacking. Much patience is needed in trying to affect change because teachers are faced with many agendas other than the improvement of their teaching. Lastly, being part of a program of teacher improvement where the researcher can get immediate feedback on treatment is certainly worth the effort, and is considered to be essential by Hall and Loucks (1977).

Recommendations

1. In-service education programs that are designed to improve a teachers effectivenes behavior, should be conducted over a period of years.
2. Hold small group meetings of teachers in training to report progress and receive feedback on self-targeted effectiveness content areas.
3. Frequently collect observational data and give results to teachers.
4. Teach teachers how to observe each other and give feedback.
5. Provide teachers the opportunity to learn about their teaching style and student learning styles.
6. Teachers should be taught how to improve teaching effectiveness competencies, that they agree are in need of improvement.
7. Provide an opportunity for teachers to learn how to create positive classroom environments.

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